

Notice of Allowability

Application No.

09/863,904

Examiner

Samuel Broda

Applicant(s)

MARCHAND ET AL.

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicants' Response sent via facsimile on 5 April 2005.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☒ The drawings filed on 14 February 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____



**SAMUEL BRODA, ESQ.
PRIMARY EXAMINER**

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1. This communication is in response to Applicants' Response to Non-Final Office Action (the "Response") sent via facsimile on 5 April 2005. In the Response, claims 1 and 19 were amended; claims 1-20 are pending.

Reasons for Allowance

2. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The closest prior art of record shows:

(1) a method for determining a diffusion coefficient for each of at least two ions capable of undergoing transport in a cement-based material, the cement-based material having a solid skeleton and pores (Truc et al, "Numerical Simulation of Multi-Species Transport Through Saturated Concrete During a Migration Test --- MsDiff Code");

(2) a finite element model to predict the transport of ions in concrete (Li et al, "Finite Element Modelling of Chloride Removal from Concrete by an Electrochemical Method"); and

(3) separation of transport of reacting solutes in porous media into six reaction classes and the exploration of the reasons for the dependence of transport mathematics on transport chemistry based on the equilibrium equations (Rubin, "Transport of Reacting Solutes in Porous Media: Relations Between Mathematical Nature of Problem Formulation and Chemical Nature of Reactions").

2.1 Applicants' first set of claims consists of claims 1-18.

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Independent claim 1 is directed to a computer-implemented method for determining an ion concentration in solution of each of at least two ions cable of undergoing transport in a cement-based material. This claim identifies the distinct limitation of: “determining a first concentration for each said at least two ions and an electrical potential profile using a transport algorithm, wherein the transport algorithm is a function of a diffusion of said at least two ions, of an adsorption of said at least two ions, of an electrical coupling between said at least two ions and a chemical activity of said at least two ions and wherein an ionic solution of said material is not in equilibrium with various solid phases of an hydrated paste of said cement-based material.”

Because the closest prior art does not appear to teach or suggest determination of a concentration using diffusion, adsorption, coupling and activity of at least two types of ions, claims 1-18 are deemed allowable.

2.2 Applicants' second set of claims consists of claims 19-20.

Independent claim 19 is directed to a computer-implemented method for determining an ion concentration in solution of each of at least two ions cable of undergoing transport in a cement-based material. This claim identifies the distinct limitation of: “determining a concentration for each said at least two ions and an electrical potential profile using a transport algorithm, wherein the transport algorithm is a function of a diffusion of said at least two ions, of an electrical coupling between said at least two ions and a chemical activity of said at least two ions and wherein said electrical coupling is solved using a Poisson equation.”

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Because the closest prior art does not appear to teach or suggest determination of a concentration using diffusion, coupling, and activity of at least two types of ions, in which the coupling is solved using a Poisson equation, claims 19-20 are deemed allowable.

3. Any comments considered necessary by Applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Samuel Broda, whose telephone number is (571) 272-3709. The Examiner can normally be reached on Mondays through Fridays from 8:00 AM – 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Kevin Teska can be reached at (571) 272-3716. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist, whose telephone number is (571) 272-2100.



**SAMUEL BRODA, ESQ.
PRIMARY EXAMINER**